CLAIMS

1. A magnetorheological damper comprising:

a) an inner tube;

b) a magnetorheological piston disposed within and slideably engaging the inner tube; and

c) an outer tube surrounding the inner tube, wherein the outer tube is in fluid communication with the inner tube.

2. The magnetorheological damper of claim 1, wherein the inner tube has a first end and has a second end, and wherein the outer tube is in fluid communication with the inner tube proximate the first end of the inner tube.

3. The magnetorheological damper of claim 2, also including a valve disposed proximate the first end of the inner tube and providing the fluid communication of the outer tube with the inner tube.

4. The magnetorheological damper of claim 3, also including a rod having a first end attached to the magnetorheological piston and having a second end extending outside the inner and outer tubes, wherein the second end of the inner tube is disposed between the first end of the inner tube and the second end of the rod, and wherein the rod contains an electrode operatively connected to the magnetorheological piston.

5. The magnetorheological damper of claim 2, also including a rod having a first end attached to the magnetorheological piston and having a second end extending outside the inner and outer tubes, wherein the second end of the inner tube is disposed between the first end of the inner tube and the second end of the rod, and wherein the rod contains an electrode operatively connected to the magnetorheological piston.

6. A magnetorheological damper comprising:

a) an inner tube;

b) a magnetorheological fluid, wherein at least a portion of the magnetorheological fluid is disposed in the inner tube;

c) a magnetorheological piston disposed within and slideably engaging the inner tube and contacting the magnetorheological fluid; and

d) an outer tube surrounding the inner tube, wherein the outer tube is in fluid communication with the magnetorheological fluid in the inner tube.

7. The magnetorheological damper of claim 6, wherein the magnetorheological piston has a magnetically energizable passageway, and wherein the passageway contains a portion of the magnetorheological fluid.

8. The magnetorheological damper of claim 6, wherein the outer tube contains a portion of the magnetorheological fluid.

9. The magnetorheological damper of claim 8, wherein the magnetorheological fluid in the outer tube is essentially magnetically unaffected by the magnetorheological piston.

10. The magnetorheological damper of claim 8, wherein the inner tube has a first end and a second end, and wherein the outer tube is in fluid communication with the inner tube proximate the first end of the inner tube.

11. The magnetorheological damper of claim 10, wherein the outer tube contains a gas, wherein the outer tube has a first end proximate the first end of the inner tube and has a second end proximate the second end of the inner tube, and wherein the gas is disposed between the magnetorheological fluid of the outer tube and the second end of the outer tube.

12. The magnetorheological damper of claim 10, also including a rod having a first end attached to the magnetorheological piston and having a second end extending outside the inner and outer tubes, wherein the second end

of the inner tube is disposed between the first end of the inner tube and the second end of the rod, and wherein the rod contains an electrode operatively connected to the magnetorheological piston.

13. The magnetorheological damper of claim 10, also including a valve disposed proximate the first end of the inner tube and providing the fluid communication of the outer tube with the inner tube.

14. The magnetorheological damper of claim 13, wherein the valve is a pressure and flow control valve.

15. The magnetorheological damper of claim 14, wherein the valve includes first and second discs, a valve body having at least one orifice, and a spring, wherein the valve body is disposed between the first and second discs, wherein the second disc is disposed between the valve body and the spring, and wherein the spring is disposed between the second disc and the magnetorheological piston.